ADDENDUM TO

APPENDIX B

COMMINGLED WASTE INVESTIGATION REPORT

FOR

DOE ID NO. GJ-44367-CC

DENVER RIO GRANDE WESTERN RAIL ROAD (PHASE F)

June 1993

CONTENTS

The information provided herein was collected in support of the Uranium Mill Tailings Remedial Action (UMTRA) Program to facilitate engineering designs, health and safety plans, and constructibility determinations. The Department of Energy disclaims any use of the information except for the purposes for which it was collected and assumes no liability for the use of the information for any purpose other than the UMTRA Program.

INVESTIGATION SUMMARY

1.0 INTRODUCTION

This section is described in section 1.0 of the original Appendix B (issued November 1991).

2.0 SITE BACKGROUND

This section is described in sections 2.0 and 3.2 of the original Appendix B (issued November 1991).

3.0 SAMPLING AND ANALYSIS

The initial CWIP sampling effort (conducted in December 1990, February and June 1991) identified an area (Area AI) of radiologically assessed contamination commingled with Polychlorinated Biphenyls (PCBs) and extractable lead. Sampling was performed in January 1993 to provide additional characterization data. The additional sample locations were selected using methodology described in the EPA documents *Verification of PCB Spill Cleanup by Sampling and Analysis (EPA 1985) and Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup (EPA 1986).* These guidance documents were written to specifically address a PCB spill. As a result the sample location determination procedure was modified to better fit the situation.

Eighteen locations were sampled during the recharacterization effort. These locations are shown on Figure 2d Addendum. Each of the sample aliquots were submitted to Chem-Nuclear Geotech chemical laboratory for PCB and Toxicity Characteristic Leaching Procedure (TCLP) metals analyses.

Results of analytes exceeding detection limits are presented in Table 1. A summary of all analytes investigated is listed in Table 2. The analytical data were reviewed for compliance with laboratory quality control and data acceptance procedures outlined in the Geotech *Analytical Chemistry Laboratory Administrative Plan and Quality Control Procedures.*

Additional information regarding Sampling and Analyses may be found in sections 3.1 and 3.4 of the original Appendix B.

4.0 SUMMARY OF RESULTS

4.1 Evaluation of Characteristic Hazardous Wastes (6 CCR 1007-3 Part 261, Subpart C)

The toxicity characteristic is measured using the TCLP. All eighteen samples were analyzed for TCLP metals. Analytical results indicate the presence of lead concentrations exceeding the regulatory threshold (RT) established by the EPA in nine locations. The RT for extractable lead (a D008 TCLP waste, per 6 CCR 1007-3 Part 261.24) is 5.0 mg/L. In addition five samples had extractable lead below the RT. Eight samples contained concentrations of extractable cadmium that exceeded the minimum detection limit, however these observed concentrations are below the RT. Section 3.6 of the original Appendix B discusses further the Characteristic Hazardous Wastes identified on this property.

4.2 Evaluation of Listed Hazardous Wastes (6 CCR 1007-3 Part 261, Subpart D)

Pesticides (4,4'-DDE) in low concentrations were detected in two of the samples (samples 15 and 18). The presence of these pesticides is probably associated with past use for their intended purpose. Colorado Hazardous Waste Regulations, Part 261.2(d) (2) (ii) states that listed commercial chemical products applied to the land are not solid (and therefore not hazardous) wastes if that is their ordinary manner of use. Pesticides in their pure commercial form do not appear to have been spilled or leaked from storage containers to the land in a manner that constitutes disposal or mismanagement.

4.3 Evaluation of Toxic Substances (40 CFR Parts 761-763, 766)

PCB analysis was performed on each of the eighteen samples, and all contained concentrations exceeding the detection limit. The highest measured concentration is 39.0 mg/Kg, and occurred in sample 14. For more discussion of the PCB contamination refer to section 3.8 in the original Appendix B. While the analyses of these samples failed to produce measurable concentrations of PCB above the RT, samples collected during the initial sampling effort identified PCBs greater than 1250 mg/Kg. The additional characterization data indicates that PCB contamination, while not uniformly distributed over the uranium mill tailings deposit, does exist within the majority of the deposit. Normal site activities (i.e. vehicle traffic, moving

of scrap metal piles etc.) can account for the variable nature of the contamination within the deposit. It can be assumed that the PCB concentration of the original "spill" is at least 1250 mg/Kg, and therefore the entire radiologically defined deposit is assigned that constituent value.

5.0 EXTENT OF COMMINGLED WASTE CONTAMINATION

Based on site investigations, analytical results, and the solid/hazardous waste definition flow chart (40 CFR 260 Appendix 1), radiologically assessed area AI contains both Toxicity Characteristic Hazardous Waste (Lead) and PCB contamination in concentrations exceeding the RT. This area is illustrated on Figure 2d Addendum. As discussed in section 4.0 of the original Appendix B this area should be considered a Commingled Waste area.

6.0 CONCLUSIONS AND RECOMMENDATIONS

It is recommended that the area described in the previous section be excluded from the remedial design of this property until an approved method for treatment and/or disposal of the regulated constituents is identified. Refer to section 5.0 of the original Appendix B for additional information.

Table 1
Commingled Waste Investigation
Sample Results
D&RGW Railroad (Phase 1F), Grand Junction, Colorado

DOE ID No. GJ-44367-CC

Sample Loc. No.	Sample Grid Coor. - Fig. No.	Sample Ticket No.	Depth Interval (inches)	Analyte	Result[1]	Regulatory Limit
1	328232	NBA 577	00-15	Cadmium Lead Total PCB's[2]	0.333 mg/L 5.17 mg/L 2.32 mg/Kg	1.0 mg/L 5.0 mg/L 50.0 mg/Kg
2	323248	NBA 578	00-15	Total PCB's[2]	0.81 mg/Kg	50.0 mg/Kg
3	319265	NBA 581	00-15	Cadmium Lead Total PCB's[2]	0.684 mg/L 13.70 mg/L 3.46 mg/Kg	1.0 mg/L 5.0 mg/L 50.0 mg/Kg
4	340244	NBA 579	00-06	Cadmium Lead Arochlor 1254	0.578 mg/L 7.77 mg/L 13.9 mg/Kg	1.0 mg/L 5.0 mg/L 50.0 mg/Kg
5	335261	NBA 580	00-06	Cadmium Lead Total PCB's[2]	0.224 mg/L 124.0 mg/L 4.32 mg/Kg	1.0 mg/L 5.0 mg/l 50.0 mg/Kg
6	355240	NBA 589	00-09	Lead Total PCB's[2]	6.69 mg/L 17.9 mg/Kg	5.0 mg/L 50.0 mg/Kg
7	352256	NBA 587	00-09	Lead Total PCB's[2]	39.1 mg/L 5.13 mg/Kg	5.0 mg/L 50.0 mg/Kg
8	347273	NBA 583	00-09	Cadmium Lead Total PCB's[2]	0.227 mg/L 1.41 mg/L 19.0 mg/Kg	1.0 mg/L 5.0 mg/L 50.0 mg/Kg
9	342288	NBA 582	00-09	Lead Total PCB's[2]	1.01 mg/L 6.08 mg/Kg	5.0 mg/L 50.0 mg/Kg
10	371236	NBA 590	00-06	Total PCB's[2]	1.21 mg/Kg	50.0 mg/Kg
11	367252	NBA 588	00-09	Lead Total PCB's[2]	10.0 mg/L 8.29 mg/Kg	5.0 mg/L 50.0 mg/Kg
12	363269	NBA 586	00-09	Total PCB's[2]	2.44 mg/Kg	50.0 mg/Kg
13	358285	NBA 585	00-09	Cadmium Lead Total PCB's[2]	0.350 mg/L 6.50 mg/L 20.3 mg/Kg	1.0 mg/L 5.0 mg/L 50.0 mg/Kg

[1] Only those results of analytes exceeding detection limits are listed.
[2] Aroclor components could not be individually quantified. Aroclors 1248, 1254, and 1260 were combined for quantitation as Total PCB's.

Table 1
Commingled Waste Investigation
Sample Results
D&RGW Railroad (Phase 1F), Grand Junction, Colorado

DOE ID No. GJ-44367-CC

Sample Loc. No.	Sample Grid Coor. - Fig. No.	Sample Ticket No.	Depth Interval (inches)	Analyte	Result[1]	Regulatory Limit
14	383247	NBA 591	00-06	Aroclor 1254	39.0 mg/Kg	50.0 mg/Kg
15	374281	NBA 576	00-18	Cadmium Lead Total PCB's[2] 4,4'-DDE	0.939 mg/L 25.8 mg/L 2.32 mg/Kg 0.14 mg/Kg	1.0 mg/L 5.0 mg/L 50.0 mg/Kg NA
16	370296	NBA 584	00-09	Cadmium Lead Aroclor 1260	0.287 mg/L 1.22 mg/L 26.0 mg/Kg	1.0 mg/L 5.0 mg/L 50.0 mg/Kg
17	390276	NBA 592	00-06	Lead Total PCB's[2]	1.10 mg/L 2.82 mg/Kg	5.0 mg/L 50.0 mg/Kg
18	386292	NBA 593	00-06	Lead Total PCB's[2] 4,4'-DDE	1.86 mg/L 2.19 mg/Kg 0.11 mg/Kg	5.0 mg/l 50.0 mg/Kg NA

[1] Only those results of analytes exceeding detection limits are listed.
[2] Aroclor components could not be individually quantified. Aroclors 1248, 1254, and 1260 were combined for quantitation as Total PCB's.

Table 2
Summary of Analytes Investigated
D&RGW Railroad, Grand Junction, Colorado

DOE ID No. 44367-CC

Analyte	Typical Detection Limit	Sample Ticket Number
TCLP Metals:		
Arsenic	1.00 mg/L	NBA 576 Through NBA 593
Barium	2.0 mg/L	
Cadmium	0.20 mg/L	
Chromium	1.00 mg/L	
Lead	1.00 mg/L	
Mercury	0.002 mg/L	
Selenium	0.20 mg/L	
Silver	1.00 mg/L	
Total Pesticides:		
alpha-BHC	0.008 mg/kg	NBA 576 Through NBA 593
beta-BHC	0.008 mg/kg	
delta-BHC	0.008 mg/kg	
gamma-BHC (Lindane)	0.008 mg/kg	
Heptachlor	0.008 mg/kg	
Aldrin	0.008 mg/kg	
Heptachlor Epoxide	0.008 mg/kg	
Endosulfan I	0.008 mg/kg	
Dieldrin	0.016 mg/kg	
4,4'-DDE	0.016 mg/kg	
Endrin	0.016 mg/kg	
Endosulfan II	0.016 mg/kg	
4,4'-DDD	0.016 mg/kg	
Endosulfan Sulfate	0.016 mg/kg	
4,4'-DDT	0.016 mg/kg	
Methoxychlor	0.80 mg/kg	
Endrin Ketone	0.016 mg/kg	
alpha-Chlordane	0.008 mg/kg	
gamma-Chlordane	0.008 mg/kg	
Endrin Aldehyde	0.016 mg/kg	
Toxaphene	0.160 mg/kg	

Table 2
Summary of Analytes Investigated
D&RGW Railroad, Grand Junction, Colorado

DOE ID No. 44367-CC

Analyte	Typical Detection Limit	Sample Ticket Number
PCBs:		
Aroclor 1016	0.080 mg/kg	NBA 576 Through NBA 593
Aroclor 1221	0.080 mg/kg	
Aroclor 1232	0.080 mg/kg	
Aroclor 1242	0.080 mg/kg	
Aroclor 1248	0.080 mg/kg	
Aroclor 1254	0.080 mg/kg	
Aroclor 1260	0.080 mg/kg	

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Approved By: Gary G Neff **Date:** 6-10-93

G.G. Neff, Manager
Commingled Waste Investigation Project

MATCH LINE 6

MATCH LINE 12

5TH STREET VIADUCT

MATCH LINE 4

MATCH LINE 6

ONE-STORY FRAME BUILDING

ONE-STORY FRAME BUILDING

TWO-STORY FRAME BUILDING

ONE-STORY METAL BUILDING

ONE-STORY METAL BUILDING

GRAVEL

SOIL

SCALE IN FEET

20 10 0 20 40

NORTH

PHASE F

PCB SAMPLE / COORDINATE

1	328232
2	323248
3	318265
4	340244
5	335281
6	355240
7	352256
8	347273
9	342288
10	371236
11	367252
12	363269
13	358285
14	383247
15	374281
16	370296
17	380278
18	386292

LEGEND

- BOUNDARY OF CONTAMINATION
- DESIGNATION OF RESIDUAL RADIOACTIVE DEPOSIT
- DEPTH OF CONTAMINATION (INCHES)
- RADIOLOGICAL CONTAMINATED AREA
- COMMINGLED WASTE SAMPLE LOCATION

PHASE F

FIGURE 2d ADDENDUM

COMMINGLED WASTE SAMPLE LOCATIONS

NO.	DATE	REVISIONS	BY	CK.	A.E.	APP.

U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION PROJECTS OFFICE, COLORADO

DENVER & RIO GRANDE WESTERN R.R.
7TH STREET
GRAND JUNCTION, COLORADO

Geotech, Inc.

DOE NO. GJ-44387

DWG. NO. 3-D44387-W7 SHT. 5 OF 6